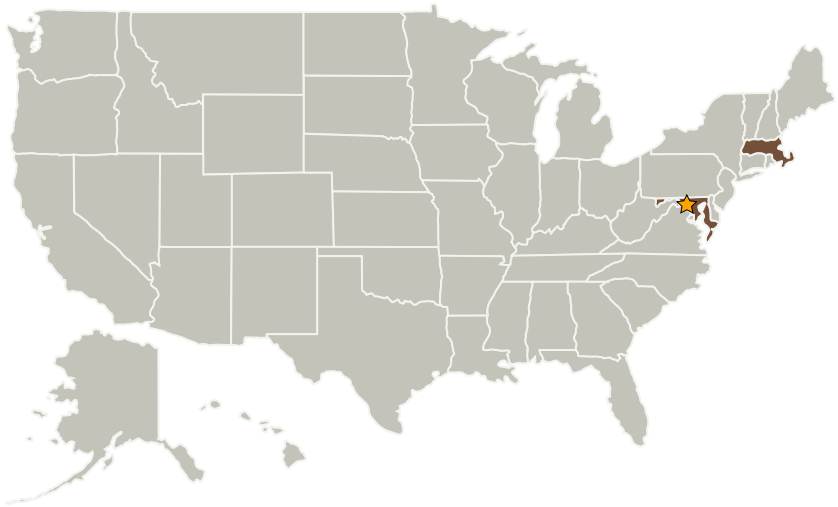
High-Speed Scanning Interferometer Using CMOS Image Sensor and FPGA Based on Multi-Frequency Phase-Tracking Detection, Phase I

Completed Technology Project (2009 - 2009)

Project Introduction

In this SBIR, we propose a new type of laser interferometer engine for in-situ large optics inspection and metrology and supporting system platform. The proposed FPGA signal processing concept together with new generation high-speed CMOS image sensor enables high speed (> 1m/sec) and real-time continuous surface profiling with minimum local memory. This transforms the currently available laser interferometer into a sub-nanometer precision instrument with only minor modification while providing easy scalability for large optic surface testing and measurement capability simultaneously.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Nanowave, Inc.	Supporting Organization	Industry	Sutton, Massachusetts

Primary U.S. Work Locations	
Maryland	Massachusetts

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX02 Flight Computing and Avionics
  - TX02.1 Avionics Component Technologies
    - TX02.1.3 High Performance Processors